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FEEDING HULLED OATS TO HOGS

by
E. F. Ferrin, Professor of Animal Husbandry

There are many differences in the opinions held by feeders concerning the value of oats in hog rations. One of the reasons for the variations in the values assigned to oats is the fact that the grain ranges in weight from 25 to 35 pounds to the measured bushel. This affects its feeding value considerably as light weight, chaffy oats is very high in hull while at the legal weight of 32 pounds to the bushel, approximately one-third of the grain is hull. This hull is probably worthless as a hog feed, and in fact, by cutting down the amount of feed the hog can eat is an actual detriment. Separating the hull from the kernel divides the grain into one portion worthless as feed and another part very high in nutritive value. The usual process of hulling yields about 40 percent of the weight of the whole oats as hull and 60 percent as kernel, including a small amount of pin oats.

The oat hulls show an analysis of approximately 29 percent crude fiber, four percent crude protein, and 52 percent nitrogen free extract. The kernels of the oat grain analyze about four percent crude fiber, 15 percent crude protein, and 65 percent nitrogen free extract. These analyses are comparable with whole oats at 10 percent crude fiber, 12.75 percent crude protein, and 60 percent nitrogen free extract.

The greatest difference between the composition of whole oats and of the oat kernel is the percentage of fiber. This is the woody cellulose contained principally in the hull. The digestive juices cannot break down cellulose as they digest proteins, carbohydrates and fats. In cattle and sheep the bacteria in the paunch work upon cellulose decomposing it and freeing food material which can be digested in the usual way. The single stomach of the pig is not a favorable place for bacterial action; such work upon the cellulose of feeds must be done in the large intestine. Here conditions are not well suited to the action of bacteria and hence cellulose is not efficiently digested by swine.

In addition to the fact that hogs cannot utilize fiber well in their digestive systems, too much bulk in feeds is a disadvantage as the appetite of swine is greater than the capacity of their systems for bulky feeds. When hays or chaffy grains are fed to hogs, their digestive tracts are filled up before they get the digestible food nutrients they want. In the case of pigs of any age on full feed, this lack of usable food reduces the daily gains. Accordingly, there is a sound reason for limiting the amount of whole oats or ground oats fed to growing pigs.

When hogs are being fattened, rapid gains usually are desired. Because of the bulk of the grain a limited quantity of oats, 20 percent to 25 percent, is as much as can be fed without reducing materially the rate of gain. Slow gains are costly and hence many feeders feel that oats have no place in a fattening ration. Experiments at University Farm and other Stations indicate that if the price of oats per bushel is more than one-half that of corn, it is not economical as a rule to feed oats to growing, fattening pigs.

Pregnant sows are not upon a full feed of grain and the bulk of oats is less of a disadvantage than it is when growing pigs or fattening hogs are fed. The high percentages of protein and mineral compounds of oats make the grain valuable for brood sow feeding. When oats are about the usual price compared with other grains, it is logical to feed oats as 50 percent of the grain ration for pregnant sows.

Since the principal objection to oats as a hog feed is the hull of the grain, it is logical to separate the hull and the kernel in order that only the kernels or groats may be fed. This is a difficult process on account of the tough, pliant condition of the whole oat. Breakfast food manufacturers heat the oats to reduce the moisture in the grain and make the hull more brittle. Special disc separators are used to hull the grain. This equipment is far too costly to be used upon farms or in mills which do custom grinding. Oat hullers moderate in price and varying in efficiency of operation are being used to obtain oat groats for feeding to calves, pigs and poultry. Many mills which do custom grinding have installed oat /

hullers. The charge for this work ranges from 12 to 20 cents per hundred pounds of whole oats, the average rate being about 15 cents.

Since approximately 40 percent of the weight of the whole oats are lost as hulls and these hulls have a feeding value equivalent to oat straw, oat groats is a high priced feed. If whole oats are valued at 25 cents per bushel, the cost per hundred pounds is 80 cents. Adding 15 cents for the hulling charge and deducting a shrinkage in weight of 40 pounds, the cost of 100 pounds of oat groats is $1.58.

If hulled oats at the cost just mentioned are to be used in large quantities as a substitute for corn, the price of corn must be placed above 75 cents per bushel. It is apparent that as a rule corn furnishes digestible nutrients cheaper than they can be obtained in hulled oats. As compared with corn the hulled oats contain more protein in a form well suited to supplement corn protein, but there is less fattening value in the oat product than in corn.

It seems certain that hulled oats seldom can be used as a complete substitute for corn if the cost of gains is taken into account. Many feeders consider hulled oats an excellent supplement to corn and believe that the feeding of a small quantity of hulled oats reduces the cost of gains. The protein of hulled oats both in quantity and quality is a valuable supplement to the corn protein, but the cost may be too high if all the protein needed to balance up corn is obtained from hulled oats.

Experimental results show that the cheapest gains are made when three or four parts of corn are fed to one part of hulled oats. When corn is $1.50 and hulled oats $2.00 per hundred weight, it is profitable to feed one-fourth of the grain ration as hulled oats. This conclusion is drawn from the results of several feeding trials with growing, fattening pigs when a protein supplement of two parts tankage, one part linseed meal, and one part alfalfa meal plus a mineral supplement was fed. There is no possibility when normal prices of corn and oats prevail of profitably substituting hulled oats for all of the corn in such a ration.

The highest value for hulled oats probably is obtained when this feed is used as a part of the ration for small pigs. It is highly desirable to self feed pigs beginning at one month of age in a creep, where they can obtain shelled corn, hulled oats and a good slop feed. This same plan can be followed with profit until at least one month after the pigs are weaned. Feeding in this way it is unnecessary to grind the hulled oats and hence a saving is made of from 8 to 10 cents per hundred pounds of the feed. It is necessary to grind the hulled oats if it is to be fed in slop. Equal parts of this feed and wheat middlings make a very good slop, especially if skimmilk or buttermilk can be used in the mixing.

Because of the high price of hulled oats, it often will be most profitable in feeding pigs over 60 to 75 pounds weight to use ground oats or whole oats. Using either feed for growing or fattening hogs, it should be remembered that oats are too bulky to be fed in large quantities if the rate of gain is as important an item as under normal conditions. Slow gains usually mean high costs and delayed marketing. Corn or barley as a rule is cheap enough in price compared with oats that most of the grain fed to market hogs should be one of these feeds rather than oats.

When pigs intended for the market are not on full feed more use can be made of oats than if one of the objects of feeding is rapid gains. Pigs farrowed in late April or during May cannot be made ready for the early fall market even by full feeding. It is logical to grow these pigs during the summer upon a one-half to three-fourths full feed of grain and for this purpose oats may be economical as 50 percent of the grain feed if it is cheap in price compared with other grains. In this case the bulky nature of the oat hull does not constitute a bad handicap to the nutrition of the pigs as they are being fed at a rate below their capacity to consume feed. When considerable oats are being fed, if the appetite of the pig is nearly satisfied, the grain is hulled in the mouth to quite an extent and the hulls discarded. Sometimes it is cheaper to let the pigs do the hulling than to pay cash for the work.

Brood sows use whole oats to the best advantage of any class of hogs. As hogs near their mature development a smaller amount of feed per pound of live weight is needed than at younger ages. Bulky feeds are not so objectionable for older hogs as for growing pigs, and pregnant sows are not often upon a full feed of grain. A mixture of oats one-half and corn or barley one-half is a good grain combination for sows carrying pigs.

When sows are suckling pigs three weeks of age or older, oats are too bulky a feed to be used in large quantities. The sows need a ration low in fiber if they are to get the nutrients necessary for heavy milk production. Hulled oats rather than whole oats or ground oats are best in the ration for sows with litters of hungry pigs. Whether or not it will be economical to feed hulled oats under these conditions depends upon the relative prices of the grain feeds available.

Understanding the high value of hulled oats, it still is necessary to appreciate the fact that the feed is relatively high in price and serves best as a part of the grain feed only in some of the conditions of feeding.